

Social Housing Allocation: A Problem Structuring approach

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THE 15<sup>TH</sup> INTERNATIONAL  
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# THE 15<sup>TH</sup> INTERNATIONAL CONFERENCE ON GROUP DECISION & NEGOTIATION LETTERS

Edited by

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# Preface

Group Decision and Negotiation refers to the academic and professional discipline that focuses on gaining an understanding of collective decision-making processes. It is involved with the formulation of rules, models, and procedures to improve these processes. The range of GDN research reflects the breath of the strategic and tactical; social-psychological and economic; individual and group; conflict and cooperation; and software-supported and software-conducted processes. The field encompasses theory building and testing, laboratory and online experiments as well as observations in the field. Therefore, GDN researchers are involved in the theoretical, experimental and applied studies as well as in the development, testing and implementation of support systems, decision aids, and software agents. They aim at helping decision makers, advisors, facilitators, and third parties to deal with difficult problems, make better decisions, and/or delegate certain decisions to software.

GDN meetings bring together researchers and practitioners from the fields of humanities, social sciences, economics, law, management, engineering, and computer science. These diverse areas reflect the breath of GDN research. The meetings' participants discuss and compare different paradigms, methods of inquiry, and objectives which they employ in their research. What is common to all participants is their interest in the difficult decision problems that involve conflicts and/or cooperation and the challenges that people face when they attempt to find satisficing agreements and reach consensuses.

Researchers from the Americas, Asia, Europe, Africa, and Oceania participate in GDN meetings. They have a stimulating variety of backgrounds and represent a wide range of disciplines. While many of us come from different traditions, we all share a common passion: research into complex decision making and negotiation involving multiple stakeholders, different perspectives, issues and emotions, requiring decision and negotiation support for both process and content.

The Group Decision and Negotiation (GDN) conference series started in Glasgow, Scotland, U.K. in 2000 and was hosted by Colin Eden. At that time, Mel Shakun – the founding member of the Section and its Chairperson from the 1995 until 2014 – assumed that the next conference may take place only after several years. There was so much interest, however, that the second meeting took place just one year later. It was organized by Alain Checroun and held in La Rochelle in 2001. Mohammed Quaddus organized the next meeting in Perth (2002). Then, from Western Australia we had moved to Istanbul (2003) and the following year to Banff (2004); these latter two meetings were held as a meeting-within-a-meeting at larger INFORMS-affiliated conferences.

The memorable GDN meetings that took place in Vienna and Karlsruhe were hosted by Rudolf Vetschera (2005) and Christof Weinhardt (2006), respectively. The 2007 GDN meeting was organized by Gregory Kersten at Mont Tremblant in Quebec, Canada. João Climaco and João Paulo Costa hosted GDN 2008 in Coimbra. Then, Gwendolyn Kolfshoten organized GDN 2010 in Delft.

Amer Obeidi did a lot of work on the organization of the GDN 2011 in Amman, Jordan. Unfortunately, this meeting did not take place because of the events in neighboring countries at that time. The next year, Adiel Teixeira de Almeida organized GDN 2012 in Recife, Pernambuco, Brazil. GDN 2013 was hosted by Bilyana Martinovski, in Stockholm and it was followed by the GDN 2014 meeting in Toulouse, which was hosted by Pascale Zarate.

Group Decision and Negotiation 2015 was the 15th meeting organized by the INFORMS section on Group Decision and Negotiation. The Conference was hosted by Tomasz Szapiro at the Warsaw School of Economics in Warsaw. During this meeting we revived the Young Researcher Award that was first given at the 2007 meeting. The Award was given to a student researcher who authored and presented the best paper at the Conference. In addition to this Award, young researchers also participated in the Doctoral Consortium. Ofir Turel and Rudolf Vetschera served as the Consortium's Chairs and hereby we acknowledge their contribution.

At the 2014 GDN meeting two volumes of proceedings were introduced; one volume published by Springer in the LBPIN series [1] and the second volume published by the Toulouse University [2]. The GDN 2015 proceedings are also in two volumes: the present volume and the book [3] published in Springer LBPIN series.

In both volumes we have introduced thematic streams of sessions. Researchers who participated in the organization of the streams wrote introductions to each stream. These introductions are included in the separate section "Introductions" (pp. XIII-XLV). They briefly discuss the streams' contributions published in both volumes thus making them better integrated. We hope that this will give the readers a more comprehensive overview of all contributions.

The contributions in this volume and in the book [3] reflect the richness of GDN scholarship. Using a variety of research approaches including real organizational settings and laboratory situations, they focus on the development, application and evaluation of concepts, theories, methods, and techniques.

Contemporary political landscape abounds in situations of multidimensional conflicts which mix military, economic and social dimensions. Troops and tanks, economic measures and sanctions, as well as massive violent protests may become destructive means of conflict resolution. Wisdom armed with values, knowledge and methods will assist politicians in the creation of new instruments for effective group decisions and negotiations. These widely shared expectations challenge researchers and simultaneously direct their efforts in creation and dissemination of ethically driven, knowledge based applicable findings. Multicultural and interdisciplinary GDN community presents their results on progress in this area.

"Collaboration leads to growth, which engenders accomplishment." [2, p. VIII]. The GDN 2015 Conference and its proceedings were made possible through the collaboration of many researchers, students, and support staff. Their dedication and support was exceptional. We are grateful to all of them; to those who made contributions, presented papers, prepared the proceedings, maintained the conference website, and undertook many other necessary tasks. Their contributions, including help in the organization of the streams and the sessions as well as the accompanying events was key to the success of this meeting. We thank the reviewers for their work. It is thanks to their in-depth reviews we are able to maintain the

high academic standard of the GDN meetings. The stream organizers and reviewers work is greatly appreciated, particularly because often they were given very little time. Their reviews provided the authors with much-needed feedback. Thank you:

Fran Ackerman, Yasir Aljefri, Adiel Almeida, Marek Antosiewicz, Reyhan Aydogan, Deepinder Bajwa, Martin Bichler, Réal Carbonneau, Wojciech Cellary, João Clímaco, Grazia Concilio, Ana Paula Costa, Suzana Daher, Luis Dias, Colin Eden, Verena Dorner, Liping Fang, Mario Fedrizzi, Michael Filzmoser, Florian Hawlitschek, Shawei He, Keith Hipel, Masahide Horita, Michał Jakubczyk, Marc Kilgour, Mark Klein, Grzegorz Koloch, Beata Koń, Sabine Koszegi, Kevin Li, Jan Machowski, Yasser Matbouli, Paul Meerts, Danielle Morais, José Maria Moreno-Jiménez, Hannu Nurmi, Amer Obeidi, Pierpaolo Pontrandolfo, Ewa Roszkowska, Anne Rutkowski, Mareike Schoop, Roman Słowiński, Rangaraja Sundraraj, Przemysław Szufel, David Tegarden, Timm Teubner, Ernest Thiessen, Sathyanarayanan Venkatraman, Rudolf Vetschera, Doug Vogel, Tomasz Wachowicz, Christof Weinhardt, Dariusz Witkowski, Paweł Wojtkiewicz, Shi Kui Wu, Yinping Yang, Bo Yu, Yufei Yuan, Pascale Zaraté, Mateusz Zawisza, John Zeleznikow, and Daniel Zeng.

The quality of the presentations is associated with the excellence of the papers. It is also affected by the venue and the overall organization of the meeting and its associated events. The Local Organizing Committee was responsible for these aspects of the meeting and they did everything to make the meeting pleasant and memorable. Thank you:

Przemysław Szufel, Marek Antosiewicz, Michał Jakubczyk, Grzegorz Koloch, Beata Koń, Tomasz Kuszewski, Jan Machowski, Paweł Wojtkiewicz, and Karolina Zakrzewska-Szlichtyng.

We hope that you find the contents of this volume as well as the contents of the book [3] useful and interesting. The authors' effort in clarifying complex problems and proposing innovative solutions should help you to cope with numerous challenges that are posed before researchers of group decision and negotiations. We also hope that the meeting and the contributions foster collaboration among the meeting's attendees as well as joint projects with researchers who were not able to come to Warsaw and participate in GDN 2015.

April 2015

*Bogumił Kamiński  
Gregory E. Kersten  
Melvin F. Shakun  
Tomasz Szapiro*



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# Social Housing Allocation: A Problem Structuring approach

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The demand for social housing (SH) has emerged all over Europe and it is exponentially increasing particularly since the 2008 global economic crisis. This growing temporary housing demand comes from a sector of the population living in the so-called “grey zone”, also known as the ‘in-work poverty’ population. The “grey zone” is composed of individuals in a situation of housing vulnerability [39]: people whose housing needs cannot be met by the market and at the same time who are not eligible to access public housing programs, such as the homeless, internal migrants, city users, single-earner families, the elderly, people subject to eviction, single parents.

Typically, the process underpinning the selection of SH projects has focused on reducing the SH shortage by providing enough supply. Nowadays, the process of selection of SH projects is no longer simply related to the lack of housing stock but also to the social, economic and cultural changes that currently affect a wide segment of the European population [7, 9, 19]. In this new scenario, the focus of SH policies is shifting from the building understood as a product to the people who live in the building. In fact where the human factor is fundamental to target the recipients, in order to pursue the integration of different social groups and the improvement the living conditions in the buildings. As the attention now being given to the topic in the international arena testifies, the scientific community and the market are looking to SH as a key area in which to test new approaches to sustainable design and implementation, taking into account not only the three “consolidated” pillars of sustainability (i. e. environment, society and economy), but also relevant additional dimensions, such as ethics, culture and technology [5].

In this scenario, SH represents a challenge that requires to be made with limited investments and at the same time designed to ensure the reduction of housing cost for users, promoters and managers in the use phase, as well as the achievement of the highest quality

standards. The housing cost, including both the rental costs and those of utilities should not exceed 40% of the users income [33].

It is a given fact that sustainable design has, above all, the environmental performance in terms of building envelope as its object and purpose. Usually, alongside this, the use of renewable energy, eco-friendly materials and technological solutions for the quality of life indoors and the optimal management of water and waste are recognized as integrated quality of the intervention. An aspect that nowadays is considered increasingly important is the ability of real estate transactions to generate and preserve value. Moreover, a key objective of SH is the creation of an “active community” where people can easily integrate into the urban context. Therefore, it is essential to pay particular attention to the location of the project, its accessibility and proximity to services, to all the forms of participation and co-planning that the project can stimulate, to the mix of facilities to be offered (in the individual building and in the neighbourhood), promoting reduced economic and social inequalities and avoiding the creation of social segregation [3]. In this sense, along with the architectural design it is therefore essential to simultaneously undertake the “project of social management” of the intervention, which means predicting the set of actors and actions in the use phase that can ensure their sustainability in terms of the community. In the planning phase it a reference profile of the future community that will ensure a balanced social mix should already be established. However, in the light of recent international environmental protocols for assessing sustainability in construction, such as LEED, SB 100, BREEAM communities, CasaClima Habitat, protocol ITHACA, Lidera, AUDIS [3, 24, 25] it is clear that, if these types of assessments are applied to SH operations, the environmental dimension takes precedence, mostly linked to energy efficiency and the attention to building materials, rather than to the social and economic aspects. Little attention is given to interpersonal sphere of living, or the aptitude of the building for the implementation of specific activities of social inclusion, or to the expected interventions and targeted aid to contrast the difficulties of the future users of social housing. These “non-traditional” aspects for a conventional residence become paramount in an SH intervention.

In order to tackle this social challenge, meet the user needs and foster effective means of public/private investment, this research intends to propose a new more tailored and effective approach for the decision making process related to the allocation of public (and private) resources for SH projects. Our research is articulated through an overview of the literature of the field and the analysis of the process of evaluation and selection of the SH interventions actually adopted by a banking foundation, in order to develop specific considerations and contributions on the topic.

A large and consolidated amount of recent literature concerning SH problems exists in different fields. Mention can be made of the studies conducted in the spheres of the link between energy and technical aspects [16, 18, 19, 20] the relation between technical aspects and construction costs [8, 10, 11, 13, 28, 37, 40], the evaluation methods of the social retrofitting intervention [31, 2, 4, 17, 26, 32, 35, 36], the quality of life and the reduction of social exclusion [12, 14, 21, 23, 29, 30]. The above mentioned extensive literature highlights the need to understand and decide which SH projects are worth funding, based on technical and social considerations, in order to provide access to housing and related social support for

those who need it [26, 38]. Therefore, a consolidated and structured evaluation method able to simultaneously consider all the aforementioned aspects in SH field is still needed. The research presented in this paper begins with the experience of an Italian bank foundation that has been involved in SH projects since 2007. This foundation developed its own assessment methodology to screen large funding requests from social agencies (cooperatives, religious bodies, public administration) wishing to implement SH projects. The methodology consists of three decision-making process stages:

1. A technical evaluation of the buildings in which the SH projects will be hosted is performed. A team according to four main criteria: (i) overall architectural consistency of the building; (ii) economic correctness of the adjustment work planned; (iii) accessibility of the spaces for people with disabilities; and, (iv) flexibility/modularity of the building. These criteria are in turn divided into thirteen sub-criteria;
2. A social evaluation of how the projects intend to provide social support destined for the future beneficiaries (mainly the inhabitants but also the neighbourhood communities) of the SH units is undertaken. A team comprising psychologists, community psychologists and psychotherapists assess all the SH projects according to three main criteria: (i) overall quality of the social support project; (ii) fairness of the financial plan of the social project; and, (iii) possibility to create synergies with cooperatives and social agencies in order to perform social activities. These criteria are subsequently divided into eleven sub-criteria;
3. Criteria weights are assigned and aggregated during the technical and social assessments by a multidisciplinary group of experts in order to obtain a ranking of the projects.

This study conceives the above assessment methodology as a Problem Structuring Method (PSM) [1, 15, 22, 27, 34], since it is configured as a flexible and real mechanism for addressing complex problems by representing the situation in a structured manner, as it exhibits many similarities with consolidated and recognised PSMs [27]. Moreover, the aforementioned methodology has the potential to be significantly improved in order to address complex issues characterized by the presence of multiple actors often with different perspectives or objectives and conflicting interests supporting participants' learning about their own and others' perspectives, as well as the problematic situation of concern [34, 6].

From this perspective, the research intends to experiment a possible improvement to the Bank foundation's assessment methodology, exploiting a participative method, based on the use of emerging technologies. ICT could provide spontaneous and voluntary data to be incorporated into a structured method, not only to support the Decision Maker (DM) in the *ex-ante* phase (with portfolio problems or constructing a tender; with the definition of the architectural, technical and social characteristics of the intervention), but also *in itinere* and in the *ex-post* phases, when it will be possible to monitor if the final outcomes meet the initial objectives.

The decision-making process related to the SH projects will be structured as follows:

- The first level of the decision-making process will directly involve the citizens and the stakeholders with the aim of clarifying the real needs of the beneficiaries of the SH units. In this phase the data will be collected in two ways: “spontaneous data”, via the analysis of social networks data, such as tweets and Flickr data; “voluntary data”, through partially structured and partially open surveys, analysed with specific semantic theories and tools;

– The second level of the decision-making process will involve the DM, experts, specific stakeholders operating directly in the SH sector (i.e. the managers of the SH buildings) and the citizens, in order to structure the decision-making model through a series of workshops. In this phase the use of PSM and ICT will be strongly supported by visual representation (3D models).

After a pilot test in Italy, the research will continue by performing test planning activities of the decision-making process in other European Countries.

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